

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

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## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year)

17 -11- 2004

Applicant's or agent's file reference

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**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

PCT/NO2004/000146

International filing date (day/month/year)

14.05.2004

Priority date (day/month/year)

15.05.2003

International Patent Classification (IPC) or both national classification and IPC

E21B 19/06

Applicant

Christensen, Matheus et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further opinions, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE  
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International application No.

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**Box No. I**      **Basis of this opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language, \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>4, 14, 18, 46-47, 51, 57, 62, 66, 74-81</u>	YES
	Claims	<u>1, 37, 55, 82</u>	NO
Inventive step (IS)	Claims	<u>4, 14, 18, 46-47, 51, 57, 62, 66, 74-81</u>	YES
	Claims	<u>1-3, 5-13, 15-17, 19-45, 48-50, 52-56, 58-61, 63-73, 82-92/</u>	NO
Industrial applicability (IA)	Claims	<u>1-92</u>	YES
	Claims		NO

2. Citations and explanations:

Documents cited in the International Search Report:

D1: US3278220 A  
D2: US3265431 A  
D3: EP1099824 A2  
D4: WO9911902 A1  
D5: US3857450 A

The invention relates to a tool and a system for handling and lifting oil & gas well tubular strings as well as a method for such handling. The stated problem to be solved is that the mud circulation must be stopped when a new pipe length is to be installed. The invention provides a solution comprising a tool for lifting and joining of pipe lengths with one and the same tool, which can handle varying pipe sizes and which also has the ability to circulate drill fluids during the operation.

Claims 1-36: The claims refer to a lifting tool for handling of a pipe-string and pipe length during joining or disassembling pipe-strings in a well or a bore hole.

Document D1 discloses a grapple for internally threaded pipe, which could be defined according to the wording of claim 1 (cf. Figure 2 and description column 2-4). Hence, claim 1 is considered to lack novelty and consequently also considered to lack an inventive step.

Most of the claims 1-36 lack any feature to solve the problem of stopping the mud circulation. Such a feature, however, is found to be present in claims 4, 14 and 18. These claims are considered to meet the criteria of novelty,

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

inventive step and industrial applicability.

Claims 2-3, 5-13, 15-17 and 19-36, however, are considered to lack an inventive step, cf. Box VIII.

Claims 37-54: The claims refer to another lifting tool for handling of a pipe-string and pipe length during joining or disassembling pipe-strings in a well or a bore hole.

Document D2 discloses a pipe transfer elevator which could be defined in accordance with the wording of claim 37, cf. Figures 1 and 2 and description, column 2-3. Hence, claim 37 is considered to lack novelty and consequently also considered to lack an inventive step.

Most of the claims 37-54 lack any feature to solve the problem of stopping the mud circulation. Such a feature, however, is found to be present in claims 46-47 and 51. These claims are considered to meet the criteria of novelty, inventive step and industrial applicability.

Claims 38-45, 48-50 and 52-54, however, are considered to lack an inventive step, cf. Box VIII.

Claims 55-73: The claims refer to yet another lifting tool for handling of a pipe-string and pipe length during joining or disassembling pipe-strings in a well or a bore hole.

Document D3 discloses an apparatus for gripping a tube externally, which apparatus could be defined in accordance with the wording of claim 55. Hence, claim 55 is considered to lack novelty and consequently also considered to lack an inventive step.

Most of the claims 55-73 lack any feature to solve the problem of stopping the mud circulation. Such a feature, however, is found to be present in claims 57, 62 and 66. These claims are considered to meet the criteria of novelty, inventive step and industrial applicability.

Claims 56, 58-61 and 63-73, however, are considered to lack an inventive step, cf. Box VIII.

Claims 74-81: The claims refer to a system for lifting or lowering a pipe-string and pipe length during joining or disassembling pipe-strings in a well or a bore hole. A special feature of the subject-matter is that the lifting tool and the lifting tool support part is configured

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of BOX V

for application or circulation of drilling fluids during the lifting or lowering operation. These claims are considered to meet the criteria of novelty, inventive step and industrial applicability.

Claims 82-92: The claims refer to a method for lifting of a pipe length to a pipe-string for application in a bore hole or a well. The steps mentioned in claim 82 are considered to be no more than normal steps a skilled artisan would go through in a lifting process. Further, document D4 discloses a lifting method including these steps, cf. the claims in D4. Therefore, the subject matter of claim 82 is considered to lack novelty and consequently also lack an inventive step.

D5 discloses a method according to which the lifting tool is rotated about a substantially horizontal axis in the elevator apparatus from a substantially vertical to a substantially horizontal position prior to activating the tool to lift a pipe length. It is considered obvious to a person skilled in the art to modify the method according to claim 82 to incorporate such a step disclosed in D5. Therefore, claims 84-85 and 89 are considered to lack an inventive step.

Claims 83, 86-88 and 90-92 are considered to lack an inventive step, cf. Box VIII.

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Box No. VII Certain defects in the international application

The following defects in the form or content of the international application have been noted:

Figures 15-17, mentioned in the description on (at least) pages 3 and 7 are not furnished.

Some reference signs, mentioned in the description are not found in the drawings (e.g. 5, 160).

It is unclear what feature some of the reference signs point to in the drawings (e.g. 60 in figure 4a). The figures are of poor quality, making further difficult to distinguish any features. For instance, in figure 1a it is unclear what reference signs 24, 27, 31a and 146 point to.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawing or on the question whether the claim are fully supported by the description, are made:

The application includes a large number of claims, several of which relate to a lifting tool for handling of a pipe-string and pipe length during joining or disassembling pipe-strings in a well or a bore hole. The claims could be grouped together in the following way:

Group 1: Claims 1-36 referring to another lifting tool for handling of a pipe-strings and pipe length during joining and disassembling of pipe-strings in a well or a bore hole.

Group 2: Claims 37-54 referring to a lifting tool for handling of a pipe-string and pipe length during joining and disassembling of pipe-strings in a well or a bore hole.

Group 3: Claims 55-73 referring to yet another tool for handling of a pipe-string and pipe length during joining and disassembling of pipe-strings in a well or a bore hole.

Group 4: Claims 74-81 referring to a lifting system for lifting or lowering pipe length and a pipe-string during joining and disassembling of pipe-strings in a bore hole or a well.

Group 5: Claims 82-92 referring to a method for lifting of pipe length for joining of pipe length to a pipe-string in a bore hole or a well.

The large number of claims makes it unclear as to what protection is sought because the claims go into minute details obscuring the scope of the claim. It is also unclear in what way the different detailed features of the claims contribute in solving the stated problem. Some of the claims, e.g. claim 2, are worded so as to define the subject-matter by the result which is to be achieved ("...is configured for rotation...". This also makes it unclear as to the construction of the tool.

Therefore, it is not considered possible to give a detailed reasoned statement regarding all the claims. Consequently, groups of claims are handled summarily in Box V.



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Vår ref./Our ref.  
**IP20041228MC**

Deres ref./Your ref.  
**PCT/NO2004/000146**

Dato/Date  
**17.01.2005**

Søknadsnr./Application No.      Oppfinnelsens tittel/Title of the invention  
**PCT/NO2004/000146                  INTERNAL RUNNING ELEVATOR**

**INTERNATIONAL PATENT APPLICATION NO. PCT/NO2004/000146**  
**MECHLIFT AS**  
**REPLY TO WRITTEN OPINION OF 17 NOVEMBER 2004 ISSUED BY THE**  
**INTERNATIONAL SEARCHING AUTHORITY (ISA)**

Dear Sirs:

Reference is made to Written Opinion dated 17 November 2004. In reply thereto, please find enclosed amended claims and amended drawings. The support in the PCT regulations for filing such amended claims is found in PCT Article 34, Rule 43bis.1(c), Rule 66.1bis(a), Rule 66.2(a), and Rule 54bis.1(a).

The translation of the specification into the English language was inaccurately made, so that the claims have now been amended to reflect a more correct translation of the specification. We would like to have the opportunity to file an amended description so as to reflect such corrections.

Regarding the issues indicated in Box No. VII regarding reference numerals indicated in the drawings, amended drawings include the missing figs. 15-17, which were indicated in the description at least on page 3 and 7. Reference numerals and indication of figure numbers have also been inserted in the drawings.

Reference numeral 5 can be found in figs. 1a, 1b, 2a, 3b and 3a, and is used to generally indicate the piece of the lifting tool connecting the lifting part 20 and a top drive or derrick crane 60, which may comprise an elevator. Reference numeral 160 is a bore hole or well which is not shown in the drawings, and this has been indicated in the amended description. The indication of reference numeral 24, 27, 31a and 146 has been clarified in the amended set of drawings. The amended set of drawings should clarify the issues raised in Box VII.

A major concern for the applicant is providing a lifting tool which may provide a safe grip so as to reduce or even entirely avoid the risk of damages to the threaded ends of pipe strings or pipe lengths in joining, lifting, lowering or disengaging operations, and so as to avoid deformation of the pipe wall.

Another important concern for the applicant is providing a lifting tool which is easy to operate, so that handling of pipes or pipe lengths in joining, lifting, lowering or disassembling operations can be conducted quickly, which is an important issue in particular when working with deep wells.

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A third important aspect is to provide a device which may resume mud circulation very early during the joining of a new section.

The lifting tool according to the invention may be rotatably arranged to the top drive or derrick crane, e.g. in an elevator arrangement. Further, the lifting tool according to the invention is pivotable about a generally horizontal axis, and it is provided with a mud filling conduit. This means that it is possible to handle pipes from a generally horizontal position to an upright position, and performing joining, lowering, lifting or disassembling operations using the same tool. With the present invention it is not required to use one tool for raising a pipe length from a generally horizontal position to a generally upright position and another tool for performing joining, lowering, lifting or disassembling and possibly mud filling operations. On the contrary, the lifting tool according to the invention may be used both for lifting pipe lengths to an upright position and for performing joining, lowering, lifting or disassembling operations.

A lifting tool according to the present invention may handle both pipes having a slick or smooth surface, without flanges, as well as pipes having other pipe end configurations.

A lifting system including such lifting tool is also provided, together with a method for operating the lifting tool in joining, lifting, lowering or disassembling such pipes or pipe lengths.

The claims relate to three different embodiments of a lifting tool, a lifting system and a method for operating a lifting tool in a joining, lowering, disassembling or lifting operation for conductors, casings, risers, drill strings or similar to be used in connection with bore holes or wells. The different groups of claims will be discussed below.

Group 1 includes claims 1-36 and relates to a lifting tool for handling pipes in joining, lowering, lifting or disassembling operations, including a lifting part having an internally running lifting nipple which primarily is arranged for carrying the entire or part of the weight of the pipe length 3 or 4 to be joined to or disassembled from the pipe string 2, and a wedge system for retaining the lifting tool to the external surface of the pipe length to the pipe length or pipe string.

Group 2 includes claims 37-54 and relates to an internally running lifting tool for handling pipe lengths and pipe strings in joining, lowering, lifting or disassembling operations, including a wedge system for retaining the lifting tool in contact with the internal surface of the pipe length or pipe string.

Group 3 includes claims 55-73 and relates to an externally running lifting tool for handling pipe lengths and pipe strings in joining, lowering, lifting or disassembling operations, including a wedge system for retaining the lifting tool in contact with the external surface of the pipe length or pipe string.

Group 4 includes claims 74-81 and relates to a lifting system for handling pipe lengths and pipe strings in joining, lowering, lifting or disassembling operations, including a lifting tool according to the invention.

Group 5 includes claims 82-92 and relates to a method for lifting pipe lengths for joining pipe lengths to a pipe string by means of a lifting tool according to the invention.

In claim group 1, claims 2 and 3 have been incorporated into the independent claim 1 so as to differ essentially from the inventions described in the cited documents.

In claim group 2, claims 38 and 45 have been incorporated into the independent claim 37 so as to differ essentially from the inventions described in the cited documents.

In claim group 3, claim 56 has been incorporated into the independent claim 55 so as to differ essentially from the inventions described in the cited documents.

Claim group 4 has been retained as pending, except for our correction of inaccurate translation from the Norwegian language into the English language and a clarification in claim 76 (renumbered claim 71).

In claim group 5, claim 84 has been incorporated in the independent claim 82 so as to differ essentially from the inventions in the cited documents D1-D5. Missing portions of the preamble of the independent claim 55 have been inserted.

The claims have been renumbered accordingly.

The cited documents will be discussed below:

D1: US 3278220 A (Wilson)  
D2: US 3265431 A (Burner)  
D3: EP 1099824 A2 (Webre)  
D4: WO 9911902 A1 (Hollingsworth)  
D5: US 3857450 A (Guier)

Document D1 (Wilson) is cited for claim group 1 and relates to a grapple for pulling drill collars and other outside flush pipe from a well bore and for handling such pipe on a rotary drilling rig. The grapple is shown having gripping jaws having external threads for engaging the threaded end of a pipe internally. Further, the grapple also includes annular expander cams arranged about a mandrel and a piston housing including a hydraulic piston arranged about the mandrel, for moving the mandrel, and thus the annular expander cams, vertically relative to the gripping jaws. By supplying hydraulic oil to the housing of the hydraulic piston for moving hydraulic piston and thus the mandrel and expander cams, the mandrel and the expander cams are moved relative to the gripping jaws, the piston housing and the stop plate.

By supplying hydraulic oil above the hydraulic piston, the mandrel and expander cams are forced to move relative to a stop plate and contract the gripping jaws. A coiled spring is arranged about the mandrel and is compressed when supplying hydraulic oil above the piston. The tool may now be entered into the threaded end of a pipe. After positioning the gripping jaws so that they may engage the threads in the threaded pipe end, the hydraulic pressure is released so that the mandrel and expander cams are released and engages the gripping jaws. Thus, the gripping jaws are forced to expand from the mandrel and the expander cams, so that the threads on the gripping jaws are forced into engagement with corresponding threads on the pipe end.

There are several disadvantages with the invention according to document D1 compared to the present invention. There is a risk of damaging the threads on the pipe end when entering the tool into the threaded pipe end, e.g. by loss of hydraulic pressure above the hydraulic piston. The gripping jaws need to be accurately positioned before engaging the threaded end. If the gripping jaws are expanded when being in an inaccurate position, the threads in the pipe end may be damaged.

Further, the entire weight of the pipe is carried by the gripping jaws, while simultaneously being expanded from each other to retain the pipe to the tool. This means that there is a risk for failure of some or all the threads on either the pipe end or the gripping jaws when the threaded gripping jaws engage the threaded pipe end, which may lead to loss of control of the grappling effect between the pipe end and the tool and failure to retain the weight of the pipe, causing damage to the pipe or the grapple, or causing personal injuries to the operators of the grapple.

The grapple according to this invention does not include a wedge system for retaining the pipe end on the external surface.

The grapple according to document D1 cannot be pivoted about a generally horizontal axis, so as to facilitate lifting of pipe lengths from a generally horizontal position into a generally upright position. For performing lifting operation on the pipe lengths, the use another tool for performing this lifting operation before the grapple can be applied to the threaded pipe end.

Document D2 (Burner) is cited for claim group 2 and relates to a pipe tool for handling or moving so-called stands, which are two or more joints of interconnected pipe stacked or positioned vertically within the confines of the pipe handling derrick, at one side of the floor thereof, when pulling the drill pipe to replace the drill bit used in boring large diameter boreholes in the order of five feet or more in diameter, in which the drill pipe used is more than one foot in diameter.

The pipe transfer elevator or pipe lifting device according to document D2 is arranged to grip the inside diameter of pipe and lift the pipe by contact with a tapered annular shoulder, by means of gripping clamps engaging an upwardly converging or tapered annular shoulder. This is a complex device, comprising a cylindrical housing with a piston cylinder including a vertically movable hydraulic piston which is threadedly connected to a piston rod. A cap threadedly engages the upper portion of the piston cylinder, and a sleeve-like cage threadedly engages the lower portion of the piston cylinder. The sleeve-like cage is arranged to be inserted into a threaded pipe end so as to separate the threaded pipe end from the inner parts of the pipe lifting device. To the lower end of the sleeve-like cage, gripping clamps are pivotably connected by pins within the respective downwardly open vertical slots in the sleeve-like cage. A cylindrical mandrel is threadedly connected in its upper end portion to the lower end portion of the piston rod. The mandrel has a externally tapered lower open-ended portion.

When supplying hydraulic oil to the chamber under the hydraulic piston, the piston rod with the mandrel will be pulled upwards in relation to the sleeve-like cage including the gripping clamps, thus forcing the tapered surfaces of the mandrel into contact with corresponding tapered surfaces on the gripping clamps, so that the gripping clamps pivot about the pins and bring the gripping clamps into contact with the pipe wall and the tapered shoulder inside the pipe (please see column 3, line 39-43).

Release of the tool from a pipe is accomplished by lowering the device within the pipe end until stops on the cap contacts the upper pipe end surface and then lowering the hydraulic piston. This will lower the mandrel and pivot the gripping clamps radially inward to a retracted position for removal of the pipe lifting device.

It will be apparent for the skilled person that the invention according to document D2 is not arranged for use on pipes having slick or smooth surfaces. Further, it is arranged for being pivotable only about a vertical axis, and not for being pivotable about a generally horizontal axis. A separate tool will have to be used for bringing the pipe from a generally horizontal position to a generally vertical position before the pipe lifting device can be inserted into a pipe end and is clamped against the inside pipe wall.

Document D3 (Webre) is cited for claim group 3 and relates to a pneumatic casing tool for gripping the casing collar of a pipe, where the casing collar has a larger diameter than the outside diameter of the well casing. The pneumatic casing tool includes one elevator slip assembly and one spider slip assembly, which are fully identical tools except for the accessories used to operate each tool.

The apparatus according to document D3 solves the problem of timing the release of the elevator slip assembly from the pipe so that at least one of the elevator slip assembly or spider slip assembly is gripping the pipe at all times and that one slip assembly may not be released unless the other set of slips has a firm grip on the well casing. Further according to document D3, the problem of inadvertent

actuation of the elevator slips and/or the spider slips unless the other set of slips are fully set in gripping position is solved. Moreover, at least one set of slips of the elevator slip assembly and the spider slip assembly may be actuated by hydraulic fluid pressure. From the specification page 3, lines 15-18 it appears that each of the elevator slip assembly and the spider slip assembly has separate pistons and piston chambers for actuating slips into gripping engagement with the pipe and for moving slips into release from the pipe.

However, the apparatus according to document D3 is not arranged for handling a pipe section into a generally vertical position above the pipe string below and joining the pipe section and the pipe string. The apparatus according to document D3 can only be used for lowering and raising a pipe section which has already been joined with a pipe string. From the specification, it appears that the elevator is not arranged for rotation about its own axis, please see, e.g., page 7, line 14; page 8, line 24-26; page 8, line 55 – page 9, lines 1-8; and page 9, lines 52-54. Obviously, at least one other tool will be required in order to bring the pipe section to a position above the pipe string held by the spider slip assembly and in order to join the pipe section with the pipe string.

Document D4 (Hollingsworth) is cited for claim group 5 and relates to a method and apparatus for aligning pipes. The method according to document D4 includes the steps of securing a lower, first pipe in slips, aligning an upper, second pipe with the lower pipe with a remotely actuatable apparatus; memorizing the position of a stabbing guide when the upper pipe is aligned with the lower pipe, connecting the upper pipe with the lower pipe, releasing the slips, lowering the upper pipe and the lower pipe, securing the upper pipe in the slips, gripping a third pipe to be connected to said upper tubular in the remotely actuatable apparatus, causing the remotely actuatable apparatus to move the third pipe into the memorized position of the stabbing guide, adjusting the position of the third pipe if necessary, connecting the third pipe to the upper, second pipe.

The method according to document D4 involves the step of memorizing the position of a stabbing guide when an upper, second pipe is aligned with a lower, first pipe prior to joining with the lower, first pipe, so that this position is remembered and a remotely actuatable apparatus may bring a third pipe to the same position. Further, the method relates to the particular aligning of an upper pipe above a lower pipe by means of a manipulator arm.

A further method according to document D4 relates to a method of facilitating the connection of an upper pipe to a lower pipe, involving the step of mechanically applying complex motion to the upper pipe as it is inserted into said lower tubular, preferably by means of the apparatus according to the apparatus claims of the document D4, which essentially relate to a manipulator arm.

Document D5 (Guier) is cited for claim group 5 and relates to a drilling rig structure including a set of rails to which a frame is arranged to be guided in vertical travel on the rail and over the bore, the frame including a top beam and a bottom beam and two links connecting the top and bottom beam. The drilling rig structure further includes a traveling block attached to the top beam and held by a lift device by means of cables so as to raise and lower the guided frame to desired vertical positions, and a swivel mounted to the bottom beam for supplying drilling mud to a pipe string and for rotating a sub or threaded pipe section end. The threaded pipe section end extends from the swivel down through the bottom beam and into alignment with the pipe and is arranged to be rotated within the swivel. The lower end of the threaded pipe section end is further arranged for connection to the pipe string and conveys drilling mud from the swivel into the pipe string. Power for rotating the swivel and pipe string is provided from the drawwork through a gear train.

In order to bring a pipe section in position above the bore hole, an elevator is swung along an arcuate path from a pivot on the frame, please see column 6, lines 20-25 and column 6, lines 35-37. This elevator is suspended in a pair of bails suspended from the bottom beam. Each bail is provided a separate pivot point and a separate fluid powered cylinder and piston, or a cross link between the two bails could be provided so that the pair of bails may be pivoted by only one fluid powered cylinder and

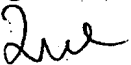
piston. Moving the elevator in position is made by means of moving the frame and the bottom beam to the vertical positions required to add pipe sections as required.

When adding a pipe section to a pipe string, the pipe string is held by a set of slips, and the threaded pipe section end mounted in the swivel is removed from the pipe string. The pipe section to be added is arranged on a rack, and the elevator is pivoted by means of the cylinder and piston arrangement so as to face the pipe section to be lifted into position above the pipe string and the bore hole. A set of clamps grapples the pipe section end below the collar so that the pipe section may be lifted and positioned above the pipe string and bore hole by means of upward movement of the traveling block and the frame guided by the rails. The end of the threaded pipe section mounted in the swivel is then entered into the pipe section lifted by the elevator, and the pipe section is lowered and entered into the collar of the pipe string. The threaded pipe section mounted in the swivel is then rotated to join both the threaded pipe section end to the top end of the lifted pipe section and the bottom end of the lifted pipe section to the pipe string. The elevator is removed from the joined pipe section, before further drilling or lowering may take place.

The invention according to document D5 may only be used on pipes having a collar, and not on slick or smooth pipes. The elevator handling pipe sections from a rack into a position above the pipe string and the bore hole may not rotate about a central axis. Rotation of the pipe section to be joined to the pipe string is achieved by means of the swivel with a threaded pipe section. This means that one tool handles the rotational movement of a pipe section to be joined to or removed from a pipe string and another tool brings a pipe section from a generally horizontal position in a rack into a generally vertical position above the pipe string. The apparatus elevator further does not include a wedge system for holding the pipe section to be lifted.

It is our opinion that the present invention as defined in the amended claims involves novel and inventive features above the cited documents. For this reason, we ask the Examiner to consider the amended claims in view of the above arguments. We also would like to file an amended description which corrections of translation inaccuracies in the specification and ask that the Examiner allows us to file such amended description.

Yours faithfully,  
Fluge & Omdal Patent AS

  
Tone Omdal